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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/437,649 | 11/10/1999 | HIROKI ADACHI | SEL144 | 8264 |

7590 12/31/2003

COOK ALEX MCFARRON MANZO
CUMMINGS & MEHLER LTD
200 WEST ADAMS ST
SUITE 2850
CHICAGO, IL 60606

EXAMINER

RAO, SHRINIVAS H

ART UNIT PAPER NUMBER

2814

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|--------------------------------|--|
| Office Action Summary | Application No. 09/437,649 | Applicant(s) ADACHI, HIROKI | |
| | Examiner Steven H. Rao | Art Unit 2814 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 8-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> . | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Applicants' amendment filed on October 09, 2003 has been entered on October 27, 2003.

Therefore claims 8, and 34 as amended by the amendment and claims 9-33 and 35-36 as previously recited are currently pending in the Application.

Claims 1-8 previously withdrawn must be cancelled in response to this Final rejection.

Election/Restrictions

This application contains claims 1-7 drawn to an invention nonelected with traverse in Paper No. 3. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Information Disclosure Statement

The IDS filed on October 09, 2003 is acknowledged. The references submitted on PTO 1449 have been considered. The contract employees have been instructed to mail a copy of the initialed PTO –1449 along with this Office Action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 –36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki (U.S. Patent No. 6,362,027, herein after Yamazaki) and Akiyama et al. (U.S. Patent No. 4,629,886 herein after Akiyama)..

With respect to claim 8 Yamazaki describes a method for manufacturing a semiconductor device comprising steps of : forming a gate electrode over a front side of a substrate; (Yamazaki fig. 39, 507) forming a semiconductor film over said gate electrode with a gate insulating film interposed there between; (Yamazaki fig. 39 , 504) forming a photosensitive film over said semiconductor film; (fig. 39, 520)

Yamazaki does not specifically describe the step of providing a reflecting plate apart from a surface of said photosensitive film by a predetermined distance; providing a light source for emitting a light;

However, Akiyama in fig.1 M1M2 and M3 etc. and col. 1 lines 25-26 describes preparing a reflecting plate apart from a surface of said photosensitive film by a predetermined distance; to preparing a light source for emitting a light to provide a provide a reflective surface that can be easily moved to desired positions , provide a light beam of larger diameter and minimize adverse effect of impurity particles in its path.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Akiyama's a reflecting plate apart from a surface of said photosensitive film by a predetermined distance in Yamazaki's method to preparing a light source for emitting a light to provide a provide a reflective surface that can be easily moved to desired positions , provide a light beam of larger diameter and minimize

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adverse effect of impurity particles in its path. a reflecting plate apart from a surface of said photosensitive film by a predetermined distance; to preparing a light source for emitting a light to provide a provide a reflective surface that can be easily moved to desired positions , provide a light beam of larger diameter and minimize adverse effect of impurity particles in its path.

The remaining limitations of claim 8 are : exposing said photosensitive film by irradiating it from a back side of said substrate with said light emitted from said light source using said gate electrode as a mask (Akiyama fig. 1 reflection from M2 and M3) and said reflecting plate for reflecting light having penetrated through said photosensitive film thereby said photosensitive film is irradiated from front side of said substrate with the light. (Akiyama fig.1 light from M1 on front side of substrate)

With respect to claim 9. Yamazaki describes a method according to claim 8, wherein said semiconductor device is selected from the group consisting of a video camera, a digital camera, a head mount display, goggle type display, an wearable display, a navigation system for vehicles, a personal computer, a portable information terminal a mobile computer, a cellular phone, and an electronic book and comprises an EL display device. (Yamazaki figs. 41 a to 41F, camera mobile computer etc.)

With respect to claim 10. Yamazaki describes a method of manufacturing a semiconductor device, comprising steps of : forming a pattern comprising a light-shielding film over a front side of a light transmissive substrate; (Yamazaki figure 16 A to 16 D) forming a photosensitive film over said pattern; (Yamazaki fig. 16 C) reflecting or scattering by a reflecting means, which is opposite to said front side of said substrate,

light from a light source which has penetrated through said photosensitive film, and irradiating said photosensitive film with the light from the front side of said substrate to expose the film; and developing the exposed photosensitive film. (a reflecting plate apart from a surface of said photosensitive film by a predetermined distance; to preparing a light source for emitting a light to provide a reflective surface that can be easily moved to desired positions , provide a light beam of larger diameter and minimize adverse effect of impurity particles in its path. (Akiyama fig. 1 reflection from M2 and M3, etc.)

With respect to claim 11, Yamazaki describes a method according to claim 10, wherein said semiconductor device is selected from the group consisting of a. video camera, a digital camera, a head mount display, goggle type display, an wearable display, a navigation system for vehicles, a personal computer, a portable information terminal a mobile computer, a cellular phone, and an electronic book and comprises an EL display device. (Yamazaki figs. 41 a to 41F, camera mobile computer etc.)

With respect to claims 12. 14, and 16 Yamazaki describes A method of manufacturing a semiconductor device, comprising steps of: forming a pattern comprising a light-shielding film over a front side of a light transmissive substrate; forming a photosensitive film over said pattern; exposing said photosensitive film by irradiating it from a back side of said substrate with light emitted from a light source while using said pattern as a mask, and reflecting or scattering by a reflecting means,

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which is opposite to said front side; of said substrate, the light from the light source which has penetrated through said photosensitive film, so that said photosensitive film is irradiated from the front side of said substrate with the light and is exposed; and to developing the exposed photosensitive film. (rejected for same reasons stated under claims 8 and 10 above).

With respect to claims 13, 15 Yamazaki describes a method according to claim 12, wherein said semiconductor device is selected from the group consisting of a video camera, a digital camera, a head mount display, goggle type display, an 15 wearable display, a navigation system for vehicles, a personal computer, a portable information terminal a mobile computer, a cellular phone, and an electronic book and comprises an EL display device. (Yamazaki figs. 41 a to 41F, camera mobile computer etc.)

With respect to claim 17 Yamazaki describes a method according to claim 16, wherein said second pattern is small in size as compared to said gate wiring pattern, and is larger s than said first pattern. (Yamazaki figure 15).

With respect to claim 18 Yamazaki describes a method according to claim 16, wherein the shape of said pattern comprising the photosensitive film corresponds to a reduced shape of said gate wiring pattern. (Yamazaki fig. 16 D).

With respect to claim 19 Yamamzaki describes a method according to claim 16, wherein said reflecting means is a reflecting plate on which a film comprising a reflective material is formed. (Akiyama fig.1 M1, fig. 3).

With respect to claim 20 Yamazaki describes a method according to claim 16, wherein said insulating film is a layer selected from a silicon nitride film, a silicon oxide nitride film, a silicon oxide film and an organic resin film, and a laminated film of those. (Yamamzaki fig. 1B #§ 107)

With respect to claim 21. A method according to claim 16, wherein said semiconductor device is selected from the group consisting of a video camera, a digital camera, a head mount display, goggle type display, an wearable display, a navigation system for vehicles, a personal computer, a portable information terminal a mobile computer, a cellular phone, and an electronic book and comprises an EL display device. (Yamamzaki figs. 41 A to F)

With respect to claim 22. A method of manufacturing a semiconductor device, comprising steps of: forming a gate wiring over a front side of a light transmissive substrate; forming a gate insulating film on said gate wiring; forming a semiconductor film on said gate insulating film; to forming an insulating film on said semiconductor film; forming a photosensitive film on said insulating film; exposing said photosensitive film by irradiating it from a back side of said substrate with light emitted from a light source while using said gate wiring as a mask, and reflecting or scattering by a reflecting means, which is opposite to said front side of said substrate, the light from the light source which has penetrated through said photosensitive film, so that said photosensitive film is irradiated from the front side of said substrate with the light and is exposed; removing an exposed part of the photosensitive film to form a pattern comprising the photosensitive film; selectively removing said insulating film using said

pattern as a mask to form a pattern comprising said insulating film; removing said pattern comprising the photosensitive film; (rejected for reasons stated under claims 10,12,14 and16) and doping said semiconductor film with a dopant for imparting a conductivity using as a mask said pattern comprising the insulating film. (Yamazaki figs. 12 A to 12 D, etc.).

With respect to claim 23 Yamazaki describes a method according to claim 22, wherein said second pattern is small in size as compared to said gate wiring pattern, and is larger than said first pattern. (Yamazaki figure 15).

With respect to claim 24. Yamamzaki describes a method according to claim 22, wherein the shape of said pattern comprising the photosensitive film corresponds to a reduced shape of said gate wiring pattern. (Yamazaki fig. 16 D).

With respect to claim 25 Yamazaki describes a method according to claim 22, wherein said reflecting means is a reflecting plate on which a film comprising a reflective material is formed. (Akiyama fig.1 M1, fig. 3).

With respect to claim 26 Yamazaki describes a method according to claim 22, wherein said insulating film is a layer selected from a silicon nitride film, a silicon oxide nitride film, a silicon oxide film and an organic resin film, and a laminated film of those. (Yamamzaki fig. 1B # \$ 107)

With respect to claim 27 Yamazaki describes a method according to claim 22, wherein said semiconductor device is selected from the group consisting of a video camera, a digital camera, a head mount display, goggle type display, an wearable display, a navigation system for vehicles, a personal

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computer, a portable information terminal a mobile computer, a cellular phone, and an electronic book and comprises an EL display device. (Yamamzaki figs. 41 A to F)

With respect to claim 28 Yamazaki describes a method of manufacturing a semiconductor device, comprising steps of: forming a gate wiring over a front side of a light to transmissive substrate; forming a gate insulating film on said gate wiring; forming a semiconductor film on said gate insulating film; forming an insulating film on said semiconductor film; forming a first photosensitive film on said insulating film; is exposing said first photosensitive film by irradiating it from a back side of said substrate with light emitted from a light source while using said gate wiring as a mask, and reflecting or scattering by a reflecting means, which is opposite to said front side of said substrate, the light from the light source which has penetrated through said first photosensitive. film, so that said first photosensitive film is irradiated with the light from the front side. of said substrate and is exposed; removing an exposed part the first photosensitive film to form a pattern comprising the first photosensitive film; selectively removing said insulating film while using said pattern as a mask to form a first pattern comprising the insulating film; removing said pattern comprising said first photosensitive film; forming a second photosensitive film; exposing said second photosensitive film by irradiating it from the back side of said substrate with light emitted from the light source while using said gate wiring as a mask, and reflecting or to scattering by a reflecting means, which is opposite to the front side of said substrate, the light from the

light source which has penetrated through said second photosensitive film, so that said second photosensitive film is irradiated with the light from the front side of said substrate and is exposed; is removing an exposed part of the second photosensitive film to form a second pattern comprising the second photosensitive film; doping with a high concentration of dopant for imparting conductivity while using as masks said first pattern and said second pattern; removing said second pattern; and doping a low concentration of dopant for imparting conductivity while using as a mask said first pattern. (same reasons as under claims 6,8,10,12,14 and 16 and Yamazaki figs. 12 A to 12 D).

With respect to claim 29 Yamazaki describes a method according to claim 28, wherein said second pattern is small in size as compared to said gate wiring pattern, and is larger than said first pattern. (Yamazaki figure 15).

With respect to claim 30. Yamazaki describes a method according to claim 28, wherein the shape of said pattern comprising the photosensitive film corresponds to a reduced shape of said gate wiring pattern. (Yamazaki fig. 16 D).

With respect to claim 31 Yamamzaki describes a method according to claim 28, wherein said reflecting means is a reflecting plate on which a film comprising a reflective to material is formed. . (Akiyama fig.1 M1, fig. 3).

With respect to claim 32 Yamazaki describes a method according to claim 28, wherein said insulating film is a layer selected from a silicon nitride film, a silicon oxide nitride film, a silicon oxide film and an organic resin film, and a laminated is film of those. (Yamamzaki fig. 1B #107)

With respect to claim 33 Yamazaki describes a method according to claim 28, wherein said semiconductor device is selected from the group consisting of a video camera, a digital camera, a head mount display, goggle type display, an wearable display, a navigation system for vehicles, a personal computer, a portable information terminal a mobile computer, a cellular phone, and an electronic book and comprises an EL display device. (Yamamzaki figs. 41 A to F)

With respect to claim 34, Yamamzaki describes a method of manufacturing a semiconductor device, comprising steps of: forming a pattern comprising a light-shielding film over a front side of a light transmissive substrate; forming a photosensitive film over said pattern; providing a reflecting means located opposite to said photosensitive film; providing a light source for emitting a light; and exposing said photosensitive film by irradiating it from a back side of said substrate with said light emitted from said light source while using said pattern as a mask wherein a reflecting means reflects a light passing through said photosensitive film, thereby said photosensitive film is irradiated from the front side of said substrate with the light and is exposed. (rejected for reasons set out under claims 5,6,8,10,12,14,16 ,22,and 28).

With respect to claim 35. Yamamzaki describes a method of manufacturing a semiconductor device, comprising steps of: forming a pattern comprising a light-shielding film over a front side of a light transmissive substrate; forming a photosensitive film over said pattern; preparing a reflecting means located opposite to said photosensitive film; preparing a light source for emitting a light; and exposing said

photosensitive film by irradiating it from a back side of said substrate with said light emitted from said light source while using said pattern as a mask wherein a reflecting means reflects a light passing through said photosensitive film, thereby said photosensitive film is irradiated from the front side of said substrate with the light and is exposed. (rejected for reasons set out under claims 5,6,8,10,12,14,16 ,22,28 and 34).

With respect to claim 36. Yamazaki describes a method according to claim 35, wherein a shape of the photosensitive film over said pattern corresponds to a reduced shape of said pattern comprising the lightshielding film. (Yamazaki fig. 16 D).

Response to Arguments

Applicant's arguments filed 10/27/03 have been fully considered but they are not persuasive. for the following reasons :

Applicants' arguments are based on individual attacks on references whereas the rejection is based on combined teachings of Yamazaki and Akiyama . See In re Keller.

Applicants' contention that Yamazaki does not teach the step of " forming a semiconductor film said gate electrode with a gate insulating film interposed there between. " is described in Yamazaki fig. 39 , semiconductor film (504) with a gate insulating film (fig. 39 430) interposed therebetween.

Yamazaki 520 is the photosensitive film.

Akiyama figs. 2, 7 etc. show M1 and M2 over scale / substrate 23.

Therefore Applicant must find all the presently recited limitations of the rejected claims.

Applicants' contention that Akiyama is not directed to an exposure of a photosensitive film over a substrate is not persuasive because Akiyama describes its device made by VLSI process (col.1 lines 15-17) which includes the step of photolithography that is exposure of a photosensitive film over a substrate.

Secondly it is well settled law that, " It has been held that the determination that a reference is from nonanalogous art is two fold. First we decide if the reference is within the field on the inventor's endeavor (herein TFTs and Mos transistors as stated in Applicants' specification page 1 and also in Akiyama) . If it is not, we proceed..

Miscellaneous

There appears to be a typographical error in Applicants' amendment , claim 34 appears twice.

The second claim 34 must be renumbered claim 35.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (703) 306-5945. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.

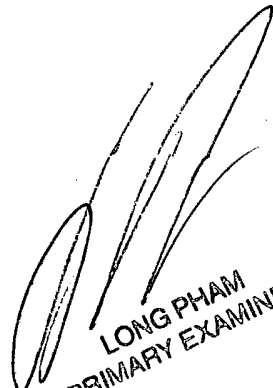
Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7724.



Steven H. Rao

Patent Examiner

~~Dec 31~~ 2003.



LONG PHAM
PRIMARY EXAMINER